

REMARKS

New claims 26-38 are now pending in this application. Claims 1-25 have been canceled without prejudice to or disclaimer of the subject matter claimed therein. Examination of new claims 26-38 is respectfully requested.

The Office Action of October 19, 2004, sets forth many rejections of one or more of claims 1-25. All of Claims 1-25 are cancelled hereby, rendering all of these rejections moot. Reconsideration and withdrawal of each of these rejections are respectfully requested.

New independent claim 26 is directed to an analyte-manipulation device, comprising at least two coextensive, elongated, electrically-conductive members disposed in fixed, spaced relation; an AC power source electrically connected to the electrically-conductive members and an electrical field gradient established by the AC power source between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; and a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder from which the retained sample has been removed.

Applicants submit that *Papp et al.* '272, mentioned in the Office Action, neither discloses nor suggests the above-described novel combination of features. As clearly shown in Figs. 4A and 4B of *Papp et al.*, the electrodes 1, 2 are only connected to a power source when the electrode assembly is inserted into the receptacle defined by receptacle contacts 9, 10. *Papp et al.* does not disclose or suggest an AC power source electrically connected to the electrically-conductive members, or an electrical field gradient established by the AC power source between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed

from a sample holder; or a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder from which the retained sample has been removed, and connected to the AC power source. Accordingly, Applicants submit that independent claim 26, and hence dependent claims 27 and 28 are novel and nonobvious in view of *Papp et al.*

Similarly, with regard to independent claim 29, and dependent claims 30-38, *Papp et al.* provides absolutely no disclosure or suggestion of an AC power source electrically connected to electrically-conductive members and an electrical field gradient established between end regions of the electrically conductive members effective to trap at least a portion of a polarizable analyte present in an electrolyte; or a polarizable analyte retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte. Accordingly, independent claim 29 and dependent claims 30-38 are novel and nonobvious in view of *Papp et al.*

Chang '486 is directed to an apparatus and method for the poration and fusion of cells using high power radio frequency electrical pulses. *Chang '486* discloses that a low amplitude continuous alternating electrical field can be applied across the electrodes, thereby causing cells within a container to act as dipoles and line up parallel to the field, eventually forming a long chain of cells which appear like "pearl chains". A pulsed RF field is then applied to porate and/or fuse the cells. The process of porating the cells results in temporary permeability of the cells that allows biological active substances to enter the cells during the poration period. Alternatively, the biological active substances can be inserted into the cells by fusing the target cells with other biological particles which have been pre-loaded with the active substances.

Applicants respectfully submit that *Chang '486* clearly does not provide any disclosure or suggestion of an AC power source electrically connected to the electrically-conductive members and an electrical field gradient established between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; or a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder from which the retained sample has been removed, and connected to the AC power source. Similarly, *Chang '486* does not provide any disclosure or suggestion of an AC power source electrically connected to electrically-conductive members and an electrical field gradient established between end regions of the electrically conductive members effective to trap at least a portion of a polarizable analyte present in an electrolyte; or polarizable analyte retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte. Accordingly, Applicants submit that independent claims 26 and 29, and hence dependent claims 27-28 and 30-38, are novel and nonobvious in view of *Chang '486*.

The Examiner agrees that *Hofmann* does not disclose a configuration wherein a sample holder and two coextensive, elongated, electrically-conductive members in fixed, spaced relation to one another are adapted for relative movement between a first position wherein at least a portion of the members is disposed within the holder and a second position wherein the members are disposed outside the holder. The Examiner asserts, however, that configuring a manipulation device such that it could be utilized for a plurality of different containers (i.e., that it can be pulled in and out of a particular analyte container) is notoriously known in the art. The Examiner cites *Dahms* as

showing a “manipulation device” that is movable into and out of a vessel. The Examiner asserts that *Dahms* is only being relied upon to show the concept of being able to move a particular analyte into and out of a particular container. The Examiner then relies upon case law for the proposition that simply making the prior art adjustable does not impart patentability over the prior art.

Applicants respectfully disagree.

The pair of electrodes 14, 16 in *Hofmann* are supported in spaced apart fashion inside a liquid container 18, with a coil 20 formed of a plurality of turns of wire, surrounding the container 18. Alternatively, the coil could be insulated and mounted within the container, it being understood that the coil must surround the region between the electrodes 14 and 16. The objective in *Hofmann* is to apply first and second electric signals to the electrodes and to the coil, respectively, to thereby generate substantially orthogonal oscillating electric and magnetic fields which are at the same frequency but approximately 90° out of phase. As a result of these oscillating electric and magnetic fields, particles having different polarization relaxation frequencies and sizes will migrate at different velocities and thereby sort into various factions. *Hofmann* provides absolutely no teaching or suggestion that it would be desirable or even possible to remove the electrically conductive members 14, 16 from the container for any purpose, such as to remove particles that have been separated by the members 14, 16.

In fact, *Hofmann* actually teaches away from any modification of the disclosed apparatus that would allow removal of the electrodes 14, 16 from the container 20. In column 5, lines 1-3, *Hofmann* states that the coil must surround the region between the electrodes 14 and 16, and furthermore, at column 5, lines 57-59, *Hofmann* discloses that baffles or other mechanisms may aid

in extracting cell fractions from the container. *Hoffman* makes no suggestion whatsoever about removing the electrodes and doing so appears impossible unless the electrodes are disassembled (see, Fig. 1 of *Hoffman*).

The Examiner relies upon *Dahms* for disclosing a way in which an analysis system can be configured to allow it to be inserted into a particular container and subsequently removed. The Examiner also appears to rely upon case law for the proposed modification of *Hofmann* by stating that simply making the prior art adjustable does not impart patentability over the prior art. With regard to the proposed modification of *Hoffman* based on the disclosure of *Dahms*, the Applicants submit that there would be no motivation to modify *Hofmann* in order to arrive at the claimed combination in independent claim 1, since there is no suggestion in either *Dahms* nor in *Hofmann* to do so, and *Hofmann* actually teaches away from such a modification. Furthermore, even if *Dahms* and *Hofmann* were combined in the manner suggested by the Examiner, the combination would not teach all of the claim limitations.

The sampler tube 44 of *Dahms* picks up a small amount of sample from a sample reservoir and then deposits that sample portion in an electrophoretic tube along with a quantity of electrophoretic medium. The sampler tube 44 is clearly not an electrically-conductive member adapted for relative movement between a first position wherein a portion of the member is disposed within a sample holder and a second position wherein the member is disposed outside of the holder. The conductors 35, 40, shown in Fig. 2 of *Dahms*, are also clearly not electrically-conductive members adapted for relative movement between a first position wherein a portion of the members are disposed within a sample holder and a second position wherein the members are disposed

outside of the holder. *Dahms* does not disclose or suggest an AC power source electrically connected to the electrically-conductive members and an electrical field gradient established between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; and a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder from which the retained sample has been removed, and connected to the AC power source. Furthermore, *Dahms* does not disclose or suggest an AC power source electrically connected to electrically-conductive members and an electrical field gradient established between end regions of the members effective to trap at least a portion of a polarizable analyte present in an electrolyte; and the polarizable analyte retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte.

The electrodes 14, 16 of *Hofmann*, are not suitable to pick up and move, transfer, or place, sample portions. *Hofmann's* electrodes are supported in a container, into which a sample can be placed. A coil 20 surrounds the region between the electrodes 14, 16 of *Hofmann*. First and second electric signals can be applied to the electrodes and the coil, respectively, to thereby generate substantially orthogonal oscillating electric and magnetic fields that are at the same frequency but approximately 90° out of phase. By selecting the frequency, particles having different polarization relaxation frequencies and sizes will migrate at different velocities and thereby sort into various fractions. If the members 14, 16 were removed from the vessel in *Hofmann*, the sample would remain in the vessel and the separation would be lost. The proposed modification of *Hofmann* to remove the electrodes in accordance with the alleged teachings of *Dahms*, would render the prior

art invention of *Hofmann* or *Dahms* unsatisfactory for its intended purpose, and therefore there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

With regard to the statement in the Office Action that case law has established that simply making the prior art adjustable does not impart patentability over the prior art, Applicants submit that such a modification of *Hofmann*, whereby the electrodes 14, 16 would be removed from the container 20, would not amount to simply making the prior art adjustable, since such a modification would destroy the intended function of the device disclosed in *Hofmann* as discussed above.

For at least the above reasons, neither *Hofmann* nor *Dahms*, whether considered individually or in combination, provides any disclosure or suggestion of an analyte-manipulation device that includes: an AC power source electrically connected to the electrically-conductive members and an electrical field gradient established between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; and a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder and connected to the AC power source. As discussed above, the proposed modification of *Hofmann* would render the invention of *Hofmann* unsatisfactory for its intended purpose, and there is no suggestion or motivation to make the proposed modification. Accordingly, Applicants submit that the Office Action fails to establish *prima facie* obviousness of the invention set forth in independent claim 26. Dependent claims 27-28 include all of the features of independent claim 26, and are therefore also patentable over the combination of *Hofmann* and *Dahms* for at least the reasons discussed above.

Independent claim 29 is directed to an analyte-manipulation device that includes an AC power source electrically connected to electrically-conductive establishing members and an electrical field gradient established between end regions of the electrically conductive members effective to trap at least a portion of a polarizable analyte present in an electrolyte; and the polarizable analyte retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte.

As discussed above with regard to independent claim 26, *Hofmann* discloses a pair of spaced-apart electrodes that are immersed in liquid and have a coil surrounding the region between the electrodes. Particles within the liquid are sorted into various fractions by applying first and second electric signals to the electrodes and to the coil, respectively, to thereby generate substantially orthogonal oscillating electric and magnetic fields. *Hofmann* provides absolutely no teaching or suggestion of mounting the electrically-conductive members on a support for movement therewith. In fact, any modification of *Hofmann* to allow the electrically-conductive members to be moved in conjunction with a support would destroy the intended function of *Hofmann* since *Hofmann* discloses that the coil must surround the region between the electrodes such that the particles will be simultaneously subjected to orthogonal oscillating electric and magnetic fields that cause separation of the particles in liquid suspension. *Hofmann* discloses that baffles or other mechanisms could aid in extracting cell fractions from the container, but clearly provides no teaching or motivation whatsoever to remove the electrodes from the container as a means for extracting cell fractions from the container. *Hofmann* does not disclose or suggest an AC power

source electrically connected to the electrically-conductive members and an electrical field gradient established between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; and a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder from which the retrained sample has been removed, and connected to the AC power source. Furthermore, *Hofmann* fails to disclose or suggest an AC power source electrically connected to electrically-conductive members and an electrical field gradient established between end regions of the members effective to trap at least a portion of a polarizable analyte present in an electrolyte; and the polarizable analyte retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte.

Dahms provides an automatic apparatus for loading known amounts of sample serum and electrophoretic medium into tubes, but clearly fails to provide any sort of teaching or suggestion of electrically-conductive members held by a support for movement therewith. Accordingly, the proposed combination of *Hofmann* and *Dahms* fails to teach or suggest all of the features in independent claim 29. In addition to failing to disclose or suggest the novel combinations of features discussed above, and claimed in independent claims 26 and 29, and hence independent claims 27-28 and 30-38, the combination of *Hofmann* and *Dahms* fails to disclose electrically-conductive members held by a support for movement therewith. Furthermore there is no suggestion or motivation either in the references themselves or in the knowledge generally available

to one of ordinary skill in the art to modify the references as suggested in the Office Action since such a modification would destroy the intended function of the references.

Accordingly, for at least the reasons discussed above, the combination of *Hofmann* and *Dahms* fails to provide any disclosure or suggestion of the novel combination of features recited in independent claim 29. Dependent claims 30-38 include all of the features of independent claim 29 and are therefore also patentable for at least the same reasons as discussed above with regard to claim 29.

Goldstein is relied upon for a teaching of placing a material such as an epoxy resin between electrically conductive members to facilitate the holding of an analyte material. *Goldstein* clearly does not overcome the above-noted deficiencies of *Hofmann*, *Papp et al.*, *Chang*, and *Dahms* since *Goldstein* fails to provide any teaching or suggestion whatsoever of electrically-conductive members held by a support for movement therewith, or of an AC power source electrically connected to the electrically-conductive members and an electrical field gradient established between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; and wherein a sample is retained by the electrical gradient between the members wherein the members are outside of a sample holder from which the retained sample has been removed, and connected to the AC power source. Furthermore, *Goldstein* fails to disclose or suggest an AC power source electrically connected to electrically-conductive members and an electrical field gradient established between end regions of the members effective to trap at least a portion of a polarizable analyte present in an electrolyte; and the polarizable analyte

retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte.

WO '219 is relied upon for a teaching of using a DC voltage to capture DNA from an analyte solution. *WO '219* clearly does not overcome the above-noted deficiencies of *Hofmann, Papp et al., Chang, Dahms, and Goldstein* because *WO '219* fails to disclose or suggest an AC power source electrically connected to the electrically-conductive members and an electrical field gradient established between the members wherein the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; and a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder from which the retained sample has been removed, and connected to the AC power source. Furthermore, *WO '219* does not disclose or suggest an AC power source electrically connected to electrically-conductive members; an electrical field gradient established between end regions of the members effective to trap at least a portion of a polarizable analyte present in an electrolyte; and the polarizable analyte retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte.

WO '173 is relied upon for a teaching of a plurality of analyte-manipulation devices mounted on a given support. Applicants submit that *WO '173* clearly does not overcome the above-noted deficiencies of *Hofmann, Papp et al., Chang, Dahms, Goldstein, and WO '219* because *WO '173* does not disclose or suggest an AC power source electrically connected to the electrically-conductive members and an electrical field gradient established between the members

wherein: the electrical field gradient is sufficient to retain a sample when the members are removed from a sample holder; and a sample retained by the electrical gradient between the members wherein the members are outside of a sample holder and connected to the AC power source. Furthermore, *WO '173* does not disclose or suggest: an AC power source electrically connected to electrically-conductive members; an electrical field gradient established between end regions of the members effective to trap at least a portion of a polarizable analyte present in an electrolyte; and the polarizable analyte retained by the electrical gradient between the members wherein the members are connected to the AC power source and are in a position removed from a source of the electrolyte.

CONCLUSION

For at least the reasons discussed in detail above, Applicants submit that independent claims 26 and 29, and dependent claims 27-28 and 30-38, are patentable over each of the applied references, whether taken alone or in combination. Withdrawal of all rejections and timely issuance of a Notice of Allowance is respectfully requested.

In view of the foregoing remarks, Applicant(s) respectfully request(s) favorable reconsideration of the present application and a timely allowance of the pending claims.

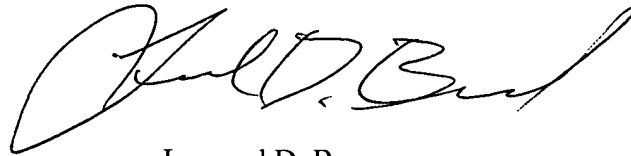
Should the Examiner deem that any further action by Applicants or Applicants' undersigned representative is desirable and/or necessary, the Examiner is invited to telephone the undersigned at the number set forth below.

If there are any other fees due in connection with the filing of this response, please charge the fees to deposit Account No. 50-0925. If a fee is required for an extension of time under 37

U.S. Patent Application No. 09/938,894
Amendment dated January 18, 2005
Reply to Office Action of October 19, 2004

C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to
said Deposit Account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Leonard D. Bowersox", written in a cursive style.

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